

OPERATING SUMMARY

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MEAFORD

WATER POLLUTION CONTROL PLANT and
WATER TREATMENT PLANT

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DEPUTY MINISTER
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ASSISTANT DEPUTY MINISTER
REGIONAL OPERATIONS
J. Barr

REGIONAL OPERATIONS DIVISION

DIRECTOR, SOUTHWESTERN REGION
D. McTavish

MANAGER, UTILITY OPERATIONS
A. Ladbrooke

MEAFORD
WATER POLLUTION CONTROL PLANT
and
WATER TREATMENT PLANT

operated for
THE TOWN OF MEAFORD
by the

MINISTRY OF THE ENVIRONMENT

1973 ANNUAL OPERATING SUMMARY

prepared by
Plant Performance Unit
TECHNICAL SERVICES BRANCH
T. Cross, Director

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WATER TREATMENT PLANT

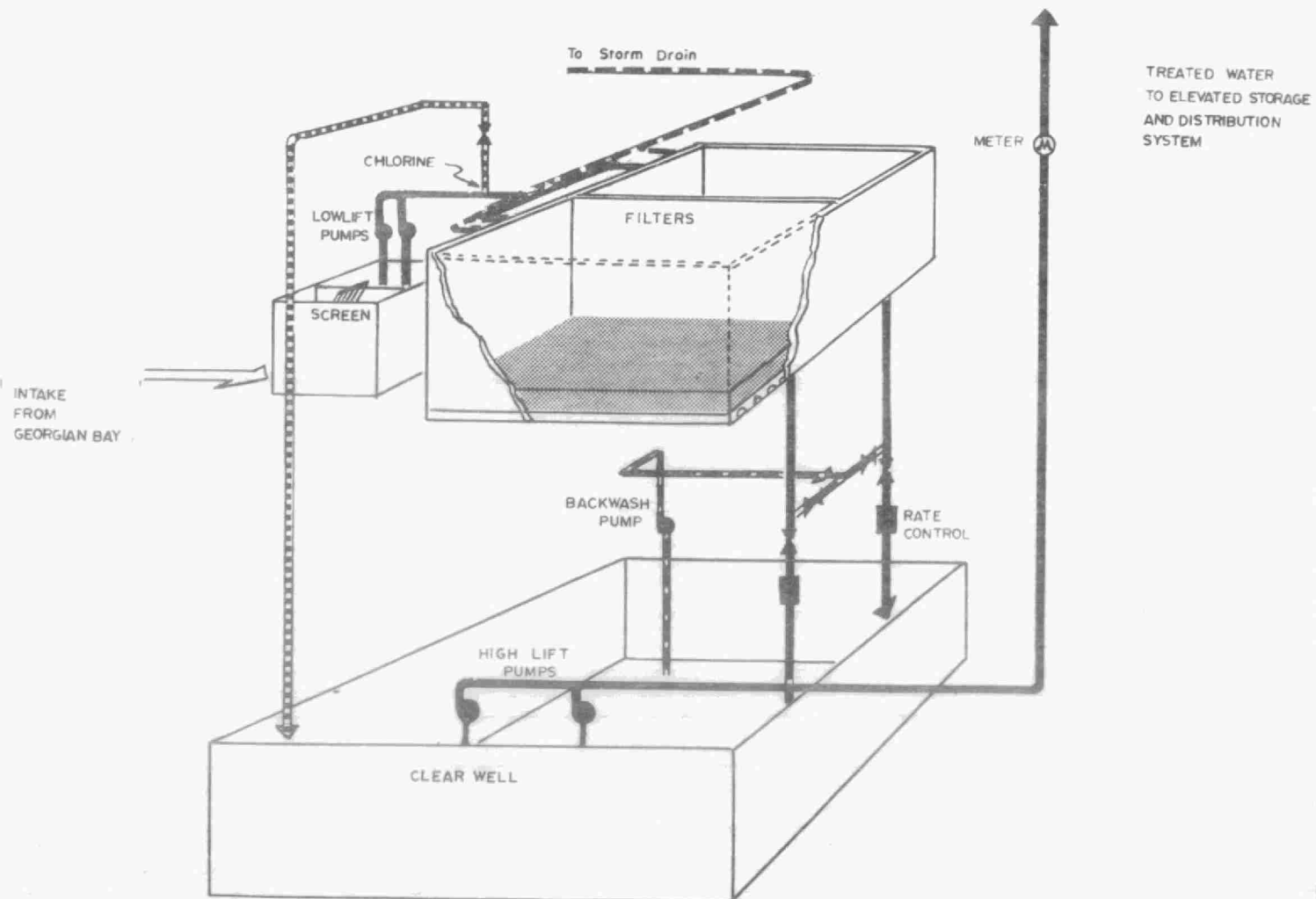
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WATER POLLUTION CONTROL PLANT

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WATER TREATMENT PLANT

TOWN OF MEAFORD WTP



DESIGN DATA

PROJECT Town of Meaford WTP

PROJECT NO. 6-0029-59

DESIGN CAPACITY 2.88 mgd

CAPACITY OF UNITS

Low Lift - Two 3 mgd @ 55'

Filters - 2.88 mgd @ 1.7 gpm/ft²

High Lift - One 2.0 mgd @ 172'

One 2.7 mgd @ 187'

FILTER

Type: Graded Anthrafilt

Size: Two 25' x 25'

Surface Wash: Palmer

CLEARWELL

Capacity: 200,000 gal.

HIGH LIFT PUMPS

#1 H. L. Pump

Type: Fairbanks-Morse

Size: One 1170 gpm @ 172'

#2 H. L. Pump

Type: DeLaval

Size: 2000 gpm @ 180'

Auxilliary Power: GMC Diesel

BACKWASH PUMP

Type: Fairbanks-Morse

Size: One 6500 gpm @ 38'

RAW WATER SOURCE

Nottawasaga Bay

INTAKE

- depth about 22 ft.

- 877' of 30" pipe

SCREENING

Chamber Size: 15' x 5' x 14'

Screens: Two 5' x 11'

LOW LIFT PUMPS

Type: Fairbanks-Morse vertical turbine

Size: Two 2100 gpm @ 55'

Auxilliary Power: Chrysler Industrial
Engine (on #2 L. L. pump)

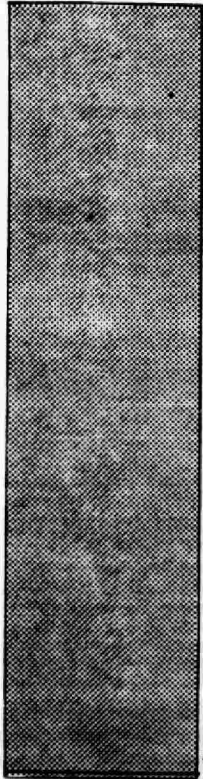
CHLORINATOR

Type: F-P gas

Size: One 40 lb/day

ANNUAL COSTS

1973 OPERATING COSTS



● SALARIES & WAGES	NIL
● EMPLOYEE BENEFITS	NIL
● TRANSPORTATION & COMMUNICATIONS	NIL
● SERVICES	100 %
● SUPPLIES & EQUIPMENT	< 1 %
● ACQUISITION/CONSTRUCTION OF PHYSICAL ASSETS	NIL
● TRANSFER PAYMENTS	NIL
● OTHER TRANSACTIONS	NIL

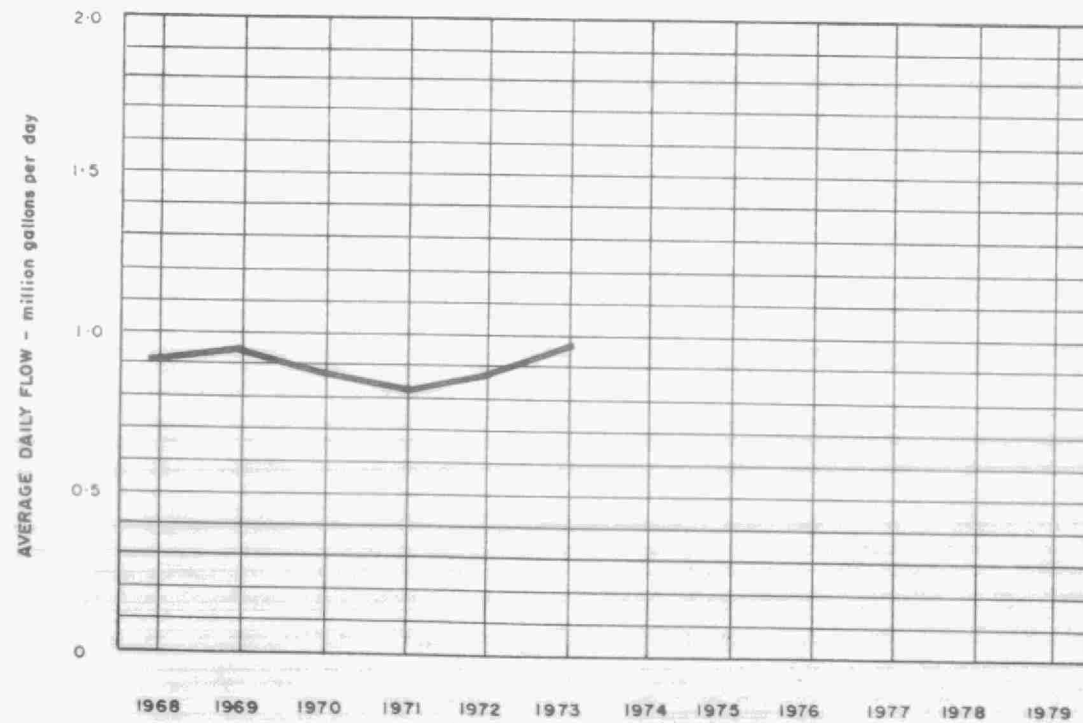
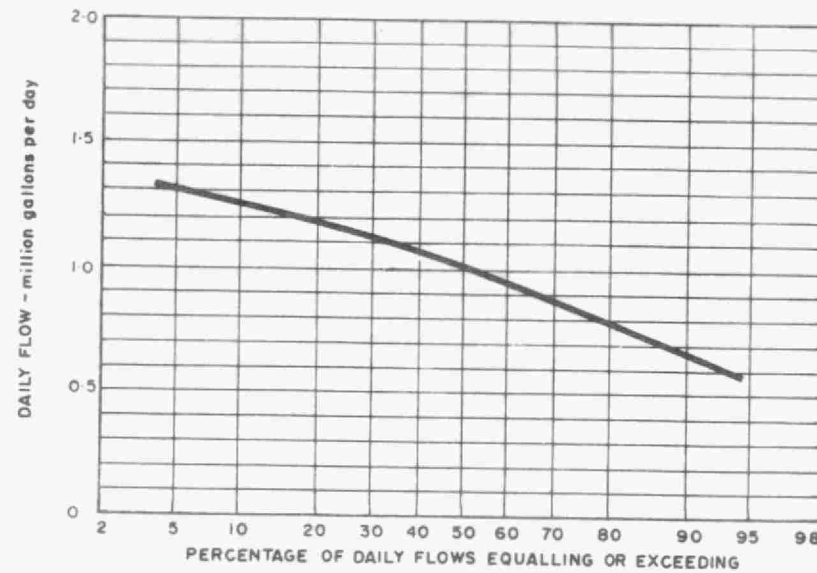
YEARLY OPERATING COSTS

YEAR	WATER TREATED in million gallons	TOTAL	UNIT COSTS
		OPERATING COSTS	cents per 1000 gal
1968	302	\$ 14,721	5
1969	339	19,894	5
1970	323	19,491	6
1971	321	19,576	6
1972	321	19,764	6
1973	349	18,460	5

OPERATING EXPENDITURES

SALARIES AND WAGES	<u>0</u>
EMPLOYEE BENEFITS	<u>0</u>
TRANSPORTATION & COMMUNICATIONS	<u>0</u>
SERVICES	<u>\$18,447</u>
SUPPLIES AND EQUIPMENT	<u>13</u>
ACQUISITION/CONSTRUCTION OF PHYSICAL ASSETS	<u>0</u>
TRANSFER PAYMENTS	<u>0</u>
OTHER TRANSACTIONS	<u>0</u>
TOTAL	<u>\$18,460</u>

PROCESS DATA FLOWS

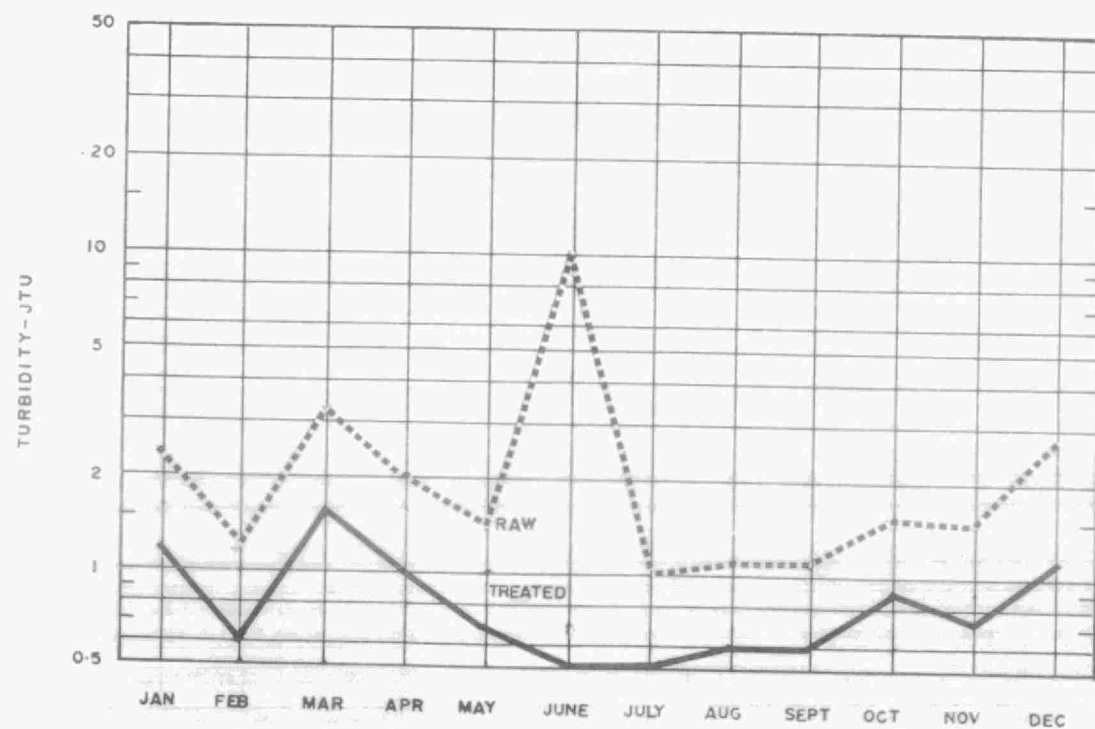
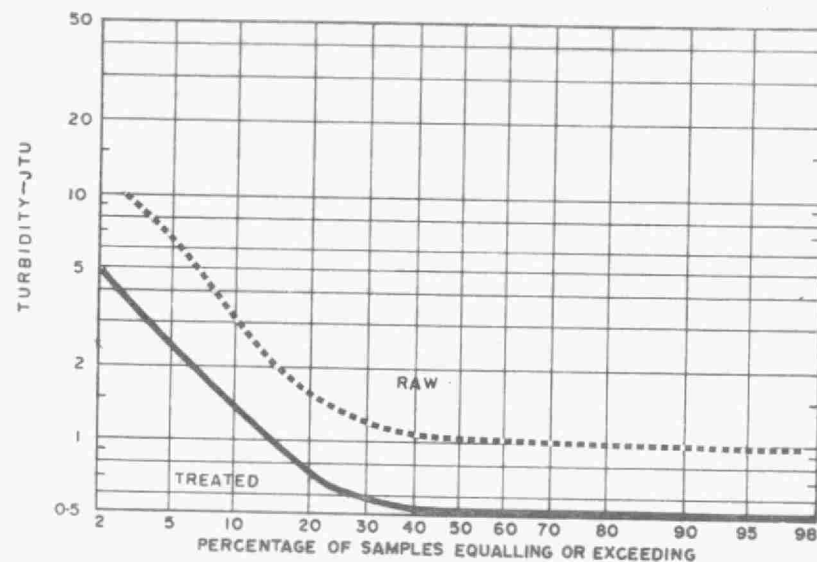


DESIGN CAPACITY 2.9 MGD

PLANT PERFORMANCE

MONTH	FLOWS				RAW WATER		TREATED WATER					
	TOTAL PLANT OUTPUT million gallons	AVERAGE DAILY FLOW million gallons	MAXIMUM DAY'S FLOW million gallons	MAXIMUM RATE mgd	TURBIDITY (AVERAGE) FTU	COLOUR (AVERAGE) App. units	TURBIDITY		COLOUR		TEMPERATURE	
							AVERAGE FTU	MAXIMUM FTU	AVERAGE App. units	MAXIMUM App. units	AVERAGE ° F	MAXIMUM ° F
JAN	27.6	0.89	1.0		2.4		1.2	5.3			35	36
FEB	24.8	0.88	1.0		1.2		0.6	3.3			32	34
MAR	28.0	0.90	1.3		3.2		1.6	5.9			32	34
APR	26.3	0.88	1.0		2.0		1.0	5.0			34	37
MAY	28.5	0.92	1.3		1.4		0.7	3.0			40	42
JUNE	28.6	0.95	1.2		10.0		0.5	0.5			46	55
JULY	40.2	1.30	1.9		1.0		0.5	0.5			62	67
AUG	31.1	1.00	1.5		1.2		0.6	1.5			66	71
SEPT	30.6	1.02	1.6		1.1	<5	0.6	1.9	<5	<5	64	72
OCT	29.7	0.96	1.1		1.7		0.9	5.7			55	60
NOV	27.6	0.92	1.1		1.5		0.7	2.0			46	48
DEC	26.0	0.84	1.0		2.8		1.1	5.2			41	44
TOTAL	349.0											
AVG.		0.96	MAXIMUM 1.6	MAXIMUM	2.5	<5	0.8	MAXIMUM 5.9	<5	MAXIMUM <5	46	MAXIMUM 72

TURBIDITY



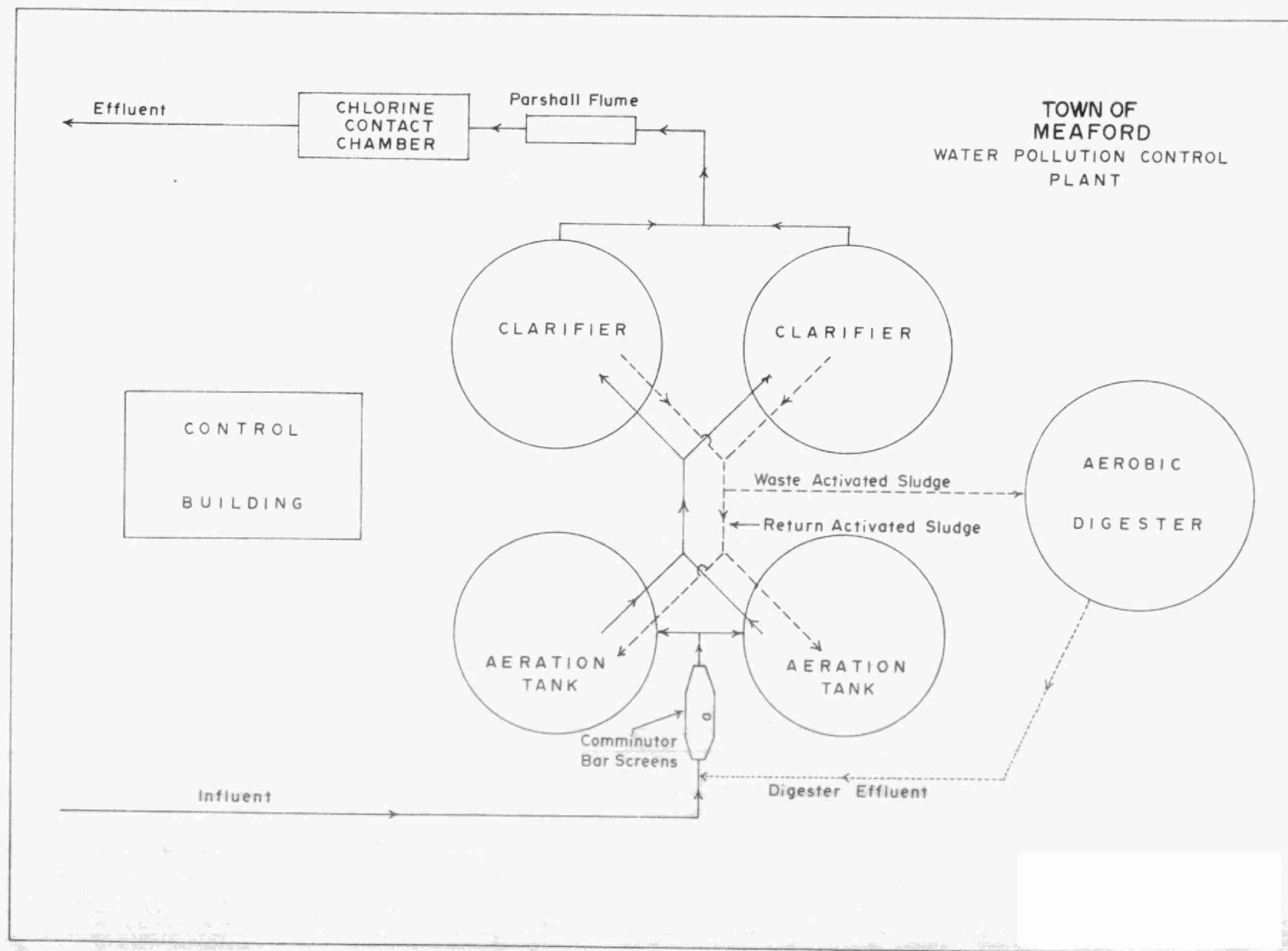
CHLORINATION and DISINFECTION

MONTH	RAW WATER					PLANT EFFLUENT		DISTRIBUTION SYSTEM		CHLORINATION			
	NUMBER OF SAMPLES HAVING TOTAL COLIFORM ORGANISMS PER 100 ml OF					NUMBER OF SAMPLES TAKEN	NUMBER HAVING COLIFORM ORGANISMS	NUMBER OF SAMPLES TAKEN	NUMBER HAVING COLIFORM ORGANISMS	TOTAL AMOUNT OF CHLORINE USED pounds	DOSAGE		RESIDUAL IN PLANT EFFLUENT mg/l
	0	1 - 3	4 - 32	33 - 320	> 320						PRE - mg/l	POST - mg/l	
JAN	0	1	0	3	0	3	0	8	0	273		1.0	0.4
FEB	2	0	1	1	0	8	0	8	0	250		1.0	0.4
MAR	0	0	1	1	2	4	0	8	0	291		1.0	0.4
APR	0	1	1	1	0	3	0	6	0	274		1.0	0.4
MAY	1	0	0	2	0	2	0	8	0	286		1.0	0.4
JUNE	2	0	1	0	0	7	0	6	0	289		1.0	0.4
JULY	2	0	0	3	1	6	0	12	0	401		1.0	0.4
AUG	0	2	0	0	0	3	1	10	0	332		1.1	0.3
SEPT	1	0	1	2	0	4	0	12	0	417		1.4	0.3
OCT	0	0	3	1	1	5	0	10	0	317		1.1	0.3
NOV	0	1	2	1	0	4	0	8	0	288		1.0	0.4
DEC	1	0	1	1	0	3	0	6	0	287		1.1	0.4
TOTAL	9	5	11	16	4	52	1	102	0	3705			
AVG.	17 (NOTE - Average shown is the GEOMETRIC MEAN)									10 pounds per day		1.1	0.4

WATER QUALITY

PROPERTY	RAW WATER				TREATED WATER				DESIRABLE STANDARDS
	NUMBER OF SAMPLES	AVERAGE	MAXIMUM	MINIMUM	NUMBER OF SAMPLES	AVERAGE	MAXIMUM	MINIMUM	
HARDNESS in mg/l as CaCO_3	1	90			1	96			80 - 100
ALKALINITY in mg/l as CaCO_3	1	73			1	73			30 - 100
IRON in mg/l Fe	1	0.35			1	<0.05			Less than 0.3
CHLORIDE in mg/l Cl^-	1	7			1	7			Less than 250
pH in pH units	1	8.1			1	8.1			7.0 - 8.5

WATER POLLUTION CONTROL PLANT



DESIGN DATA

PROJECT Town of Meaford WPCP

PROJECT NO. 1-0003-66

TREATMENT Activated Sludge

DESIGN FLOW 0.86 mgd

COMMINUTOR

Type: Condux type 400
Max. Capacity - 2.58 mgd

AERATION TANKS

2 tanks, each 30'0" dia x 19'3" swd
Capacity: 170,000 I.G. total
Detention: 4.7 hours

Aerators

Type: 2 mechanical Ames-Crosta
driven by 50 hp electric motors

SECONDARY CLARIFIER

2 clarifiers 40'0" dia x 10'9" avg. swd
Capacity: 168,000 I.G. total
Detention: 4.7 hours
Loading: Surface 340 gal/ft²/day
Return Sludge Pumps: 2, 720 IGPM
@ 30' tdh

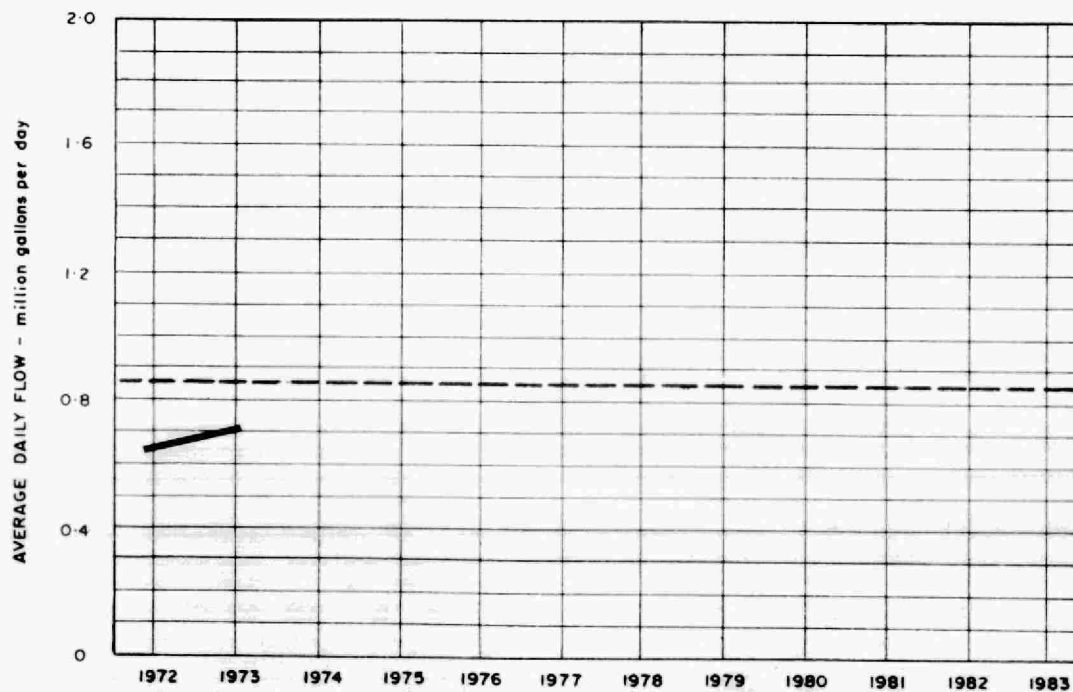
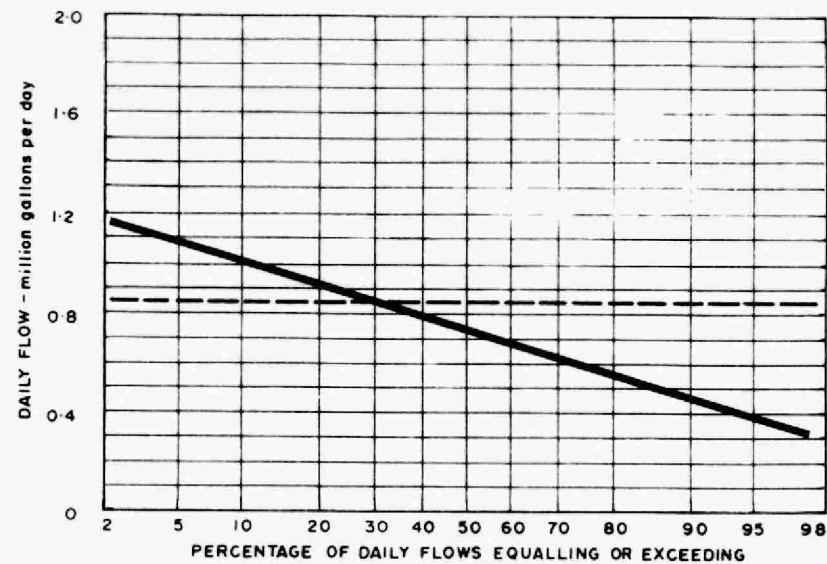
CHLORINE CONTACT CHAMBER

Size: 24' x 8' x 6' 6", 8400 gallons
Detention Time: 14 min.

AEROBIC DIGESTER

Dimensions: 50'0" dia x 18'6" avg swd.
Capacity: 227,000 I.G.
Aerator: 1 at 50 rpm

PROCESS DATA FLOWS

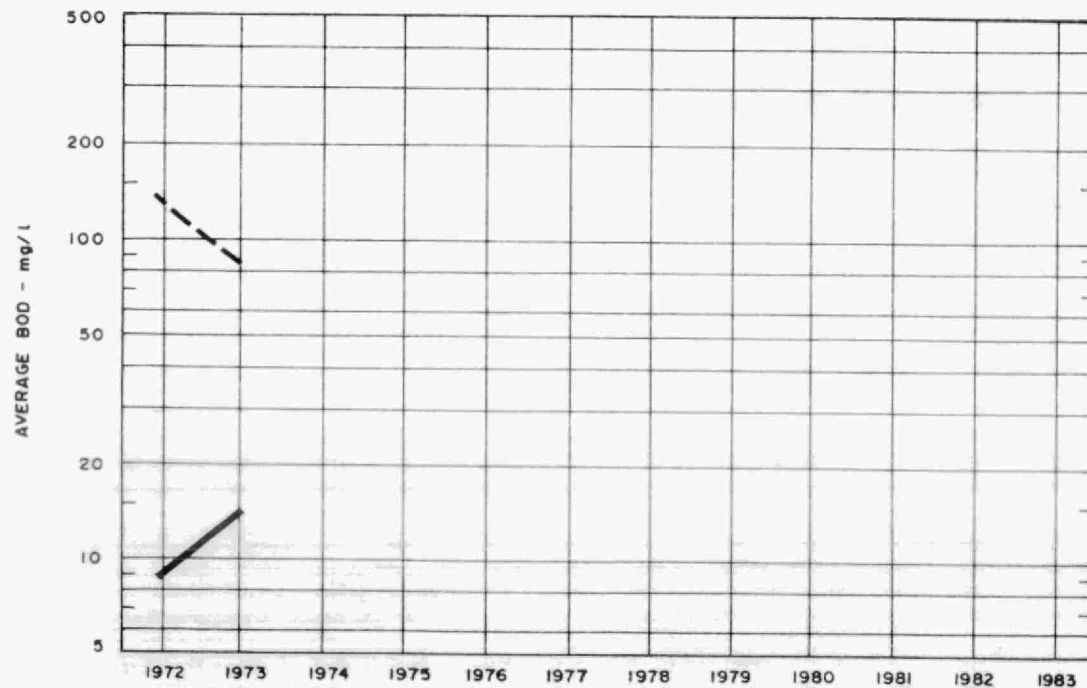
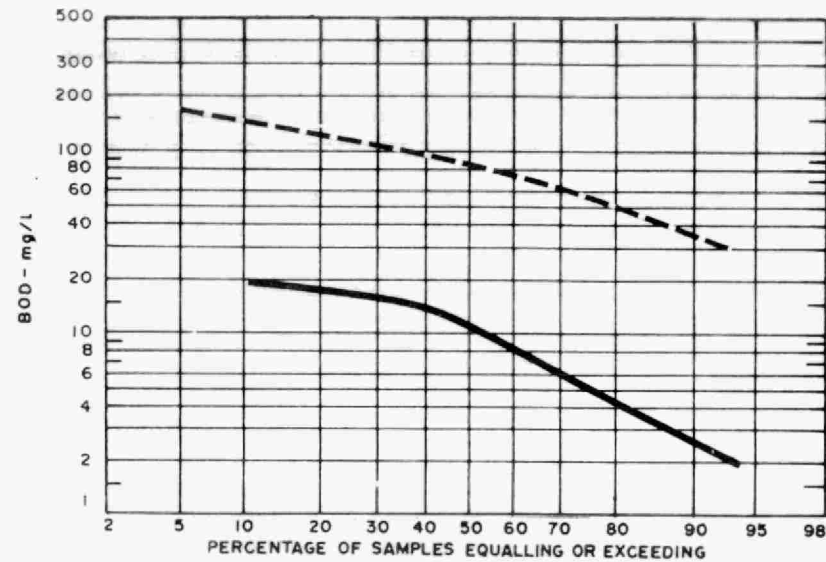


DESIGN CAPACITY — — — — —

PLANT PERFORMANCE

MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				PHOSPHORUS	
	TOTAL FLOW	AVERAGE DAY	MAXIMUM DAY	INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT
	million gallons	mil. gal	mgd	mg/l	mg/l	%	10 ³ pounds	mg/l	mg/l	%	10 ³ pounds	mg/l P	mg/l P
JAN	25.4	0.82	1.31	80	10	88	17.8	71	17	76	13.7	20.0	4.4
FEB	17.1	0.61	1.14	80	62	91	12.5	62	18	71	7.5	16.0	3.8
MAR	26.2	0.84	1.27	70	22	69	12.6	87	22	75	17.0	5.9	2.7
APR	19.5	0.65	1.12					131	25	81	20.7		
MAY	22.0	0.70	1.53	120	7	94	24.9	89	15	83	16.2	14.0	4.1
JUNE	20.9	0.69	1.14	110	16	85	19.7	348	27	92	67.2	3.5	1.8
JULY	19.7	0.63	0.90	90	5	94	16.8	85	5	94	15.8	4.6	3.2
AUG	20.4	0.66	1.23	72	9	86	13.9	141	16	89	25.5	3.5	1.5
SEPT	18.7	0.62	1.01	95	13	86	15.3	92	6	93	16.1	8.0	2.6
OCT	19.8	0.64	0.96	110	9	92	20.0	83	17	80	13.1	8.4	4.2
NOV	24.5	0.82	1.69	49	10	80	9.6	112	16	86	23.5	6.9	2.0
DEC	19.0	0.61	1.14	100	9	91	17.3	134	20	85	23.7	3.0	1.2
TOTAL	253.2	-	-	-	-	-		-	-	-	260.4	-	-
AVG.		0.70	MAXIMUM 1.69	85	14	84	17.3	118	17	86	21.7	7.8	2.7
No. of Samples	-	-	-	15	15	-	-	67	67	-	-	15	15

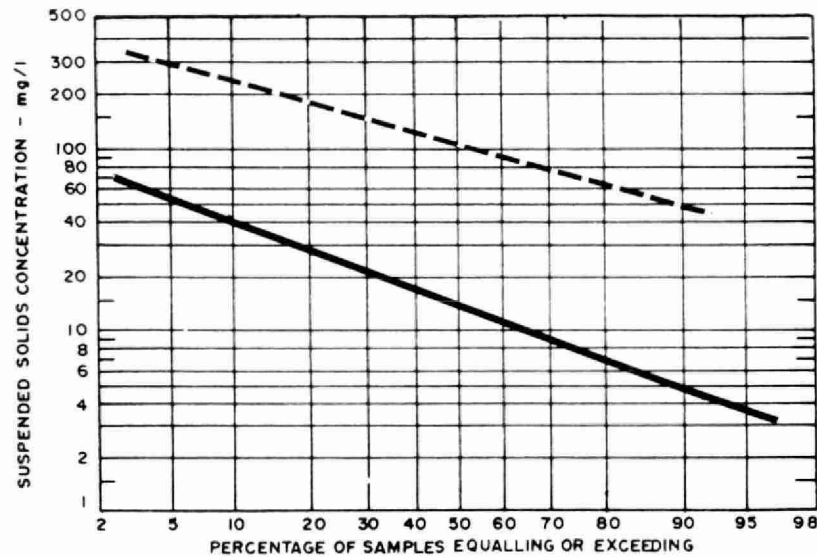
BIOCHEMICAL OXYGEN DEMAND



PLANT INFLUENT - - - - -

PLANT EFFLUENT _____

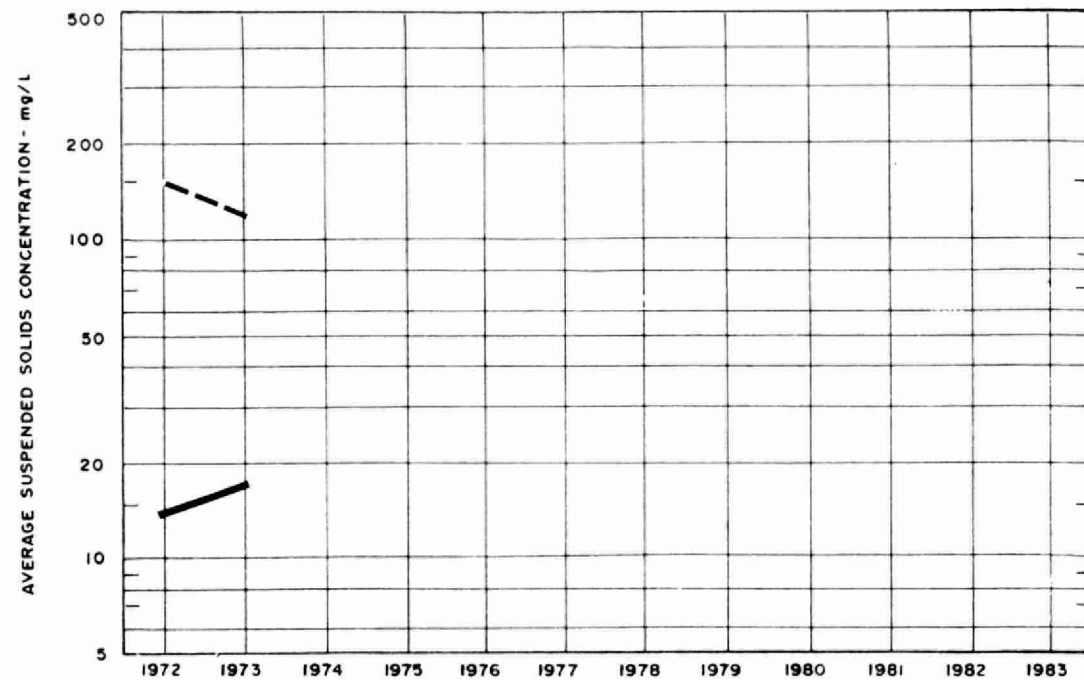
SUSPENDED SOLIDS



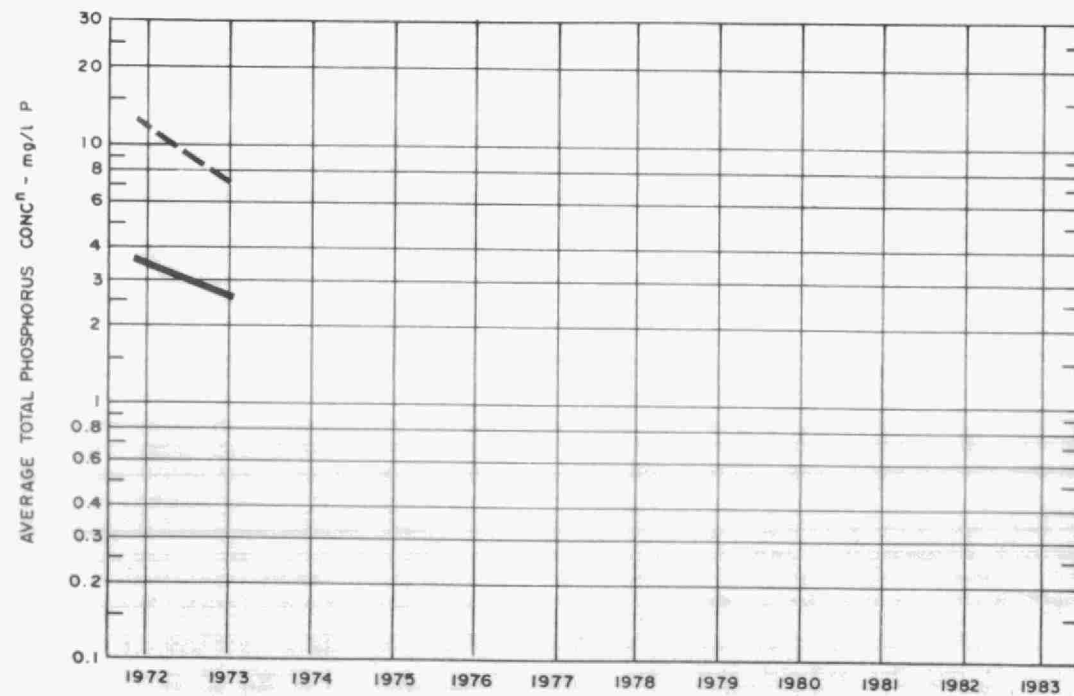
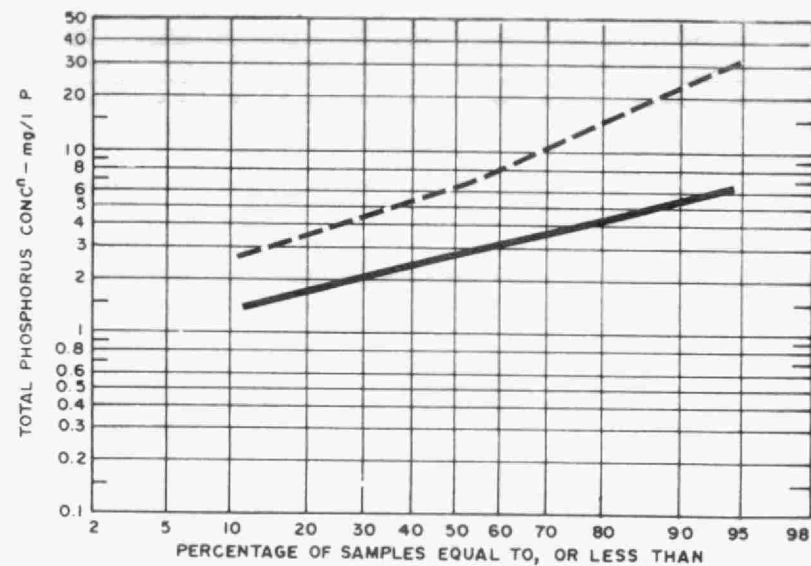
PLANT INFLUENT

PLANT EFFLUENT

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PHOSPHORUS



PLANT INFLUENT -----

PLANT EFFLUENT _____

TREATMENT DATA

MONTH	GRIT	CHLORINATION		AERATION			WASTE SLUDGE			AEROBIC DIGESTER			
	QUANTITY REMOVED	CL ₂ USED	AVG. DOSAGE	MLSS CONC	F/M	AIR USED	QUANTITY	SUSPENDED SOLIDS	VOL. SOLIDS	QUANTITY REMOVED	SUSPENDED SOLIDS	VOL. SOLIDS	AMOUNT HAULED
	cubic feet	pounds	mg/l	mg/l	day ⁻¹	$\frac{1000 \text{ ft}^3}{\text{lb BOD}}$	10 ³ gallons	mg/l	%	10 ³ gallons	mg/l	%	cubic yards
JAN	0	448	1.8	2700	0.10			7900	52	0			
FEB	0	389	2.3	4300	0.05			9900	52	0			0
MAR	0	425	1.6	1900	0.14			5500	50	0			0
APR	0	305	2.0	2700				8900	57	49.4	40000	51	293
MAY	0	558	2.5	4000	0.09			9000	60	0	5100	57	0
JUNE	7	668	3.2	3000	0.11			6700	50	0	7900	48	0
JULY	0	730	3.7	4700	0.12			4700	65	0	7700	50	0
AUG	0	523	2.6	2400	0.09			6300	54	0	5100	50	0
SEPT	0	512	2.7	2000	0.13			3800	60	5.0	5200	59	30
OCT	0	609	3.0	2100	0.14			4600	69	0	4800	57	0
NOV	0	840	3.4	2300	0.08			5400	72	0	5300	66	0
DEC	0	540	2.8	2000	0.13			5500	68	20.0	1000	61	120
TOTAL	7	6627	-	-	-	-		-	-	74.4	-	-	443
AVG.	0.03 cu. ft/mil gal	552	2.6	2800	0.11			6500	59		5100	55	

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